ADSTEAM MARINE LIMITED

Submission to the

Productivity Commission Inquiry Into The Economic Regulation Of Harbour Towage And Related Services

PART B - ECONOMIC INDUSTRY REPORTS

Report 2

International Benchmarking of Australian Declared Ports: Harbour Towage

Thompson Clarke Shipping Pty Ltd

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All queries and correspondence regarding
this report should be directed to Peter Macmillan
by telephone on (03) 9504 5888 or 0417 239 115
or by email at pmacmillan@adsteam.com.au

International Benchmarking of Harbour Towage at Australian Declared Ports

Thompson Clarke Shipping Pty Ltd

Suite 8 11 Beach St, PO Box 419
Port Melbourne Vic 3207
Australia

Telephone + 61 3 9646 3155

Facsimile: + 61 3 9646 3437
Email shipping@ozemail.com.au

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1 EXECUTIVE SUMMARY

1.1.1 Background

Thompson Clarke Shipping has prepared this report as part of the submission of Adsteam Marine to the Productivity Commission (PC) inquiry into Harbour Towage in the seven Australian ports that since 1991 have been designated "declared" under the Prices and Surveillance Act of 1983. On January 30th, 2002, Adsteam submitted proposals for harbour towage price increases in five of the seven ports to the Australian Competition and Consumer Commission (ACCC). These were rejected by the ACCC on February 20th, and on the same day the Parliamentary Secretary to the Treasurer announced the PC inquiry, whose prime focus is to examine:

- The impact of structural reform on the harbour towage industry
- Measures to increase competition in the same industry
- The need for continuing price oversight of the industry

1.1.2 Brief

This report is intended to benchmark the Harbour Towage operations of Adsteam Marine in the seven declared ports against 12 international Harbour Towage operations around the world in Asia Pacific, Europe and North America. The Australian part of the brief was to review over the last five years Adsteam's operations in the declared ports in respect of:

- Potential and actual market size and growth trends
- The towage fleet operated by Adsteam and the related manning levels
- Levels of service provided and related delivery mechanisms
- Identification and measurement of suitable productivity variables

The International portion of the brief required the development of a current profile of harbour towage operations in five ports in the Asia Pacific region, four in Europe, and three in the USA, in respect of:

- The local harbour industry and market
- Local harbour towage service delivery
- The degree of contestability and regulation prevailing in the local industry.

The overall intention was to benchmark the evolving Australian operation against a range of current international harbour towage operations in respect of these identified variables.

1.2 Australian Harbour Towage

The following key features have been identified:

- The potential market at 11,600 ship calls in the seven ports has stagnated over the last 5 years, and the actual market served by Adsteam (8,500 calls of 73% of the potential market) has fared little better with a compound annual growth of < 1%.

- The single largest segment of the actual market (43%) is made up of container vessels, whose size locally and globally is rapidly growing (the largest such ship calling in Australia in today is 40% larger in container terms than the equivalent five years ago).

- Adsteam bases 27 operational and 4 back up tugs in the declared port market. The typical indicative profile of this harbour towage fleet is a current vessel average age of 13 years, with a bollard pull range of 41 to 62 tons and horsepower up to 4800. The extensive upgrading of tonnage in 2000 has produced about a 30% drop in average vessel age in the fleet and a 10% increase in power.

- Crewing is 3 or 4 per tug and seagoing personnel has dropped 27% over the period.

- The most significant productivity indicator is that some 3% greater business volume was handled in 2001/02 with 5% less capacity v. five years ago.

1.3 Harbour Towage in the Asia Pacific Region

The following salient features emerged on the operations examined (Auckland, Hong Kong, Port Klang, Singapore and Yokohama):

- Three ports are dramatically larger than the Australian operations reviewed, with the single ports of HK and Singapore being among the world's largest; Klang was roughly comparable to the combined Australian ports and Auckland about the same size as Adelaide

- In all locations there was more than one harbour towage service provider other than in Auckland, despite the paucity of regulation in that market, and in four of the ports major towage companies were affiliated with major terminal operators.

- Vessel utilisation was dramatically higher than Australia in terms of tug jobs per ship call in both Singapore and HK thanks to high business volume and geographic concentration

- Only Singapore provided reasonably comprehensive related capabilities on their tugs such as salvage and firefighting similar to Australia
- Manning and service delivery were reasonably comparable
- The region provided a sharp contrast from the regulatory perspective, with Singapore highly controlled (licences, performance etc) by the Marine and Ports Authority and HK as well as Auckland largely unregulated. Competition in contested locations was keen with resultant pressure on financial returns.

1.4 Harbour Towage in Europe

The local industry displayed a number of important differences from both Asia and Australia in the operations examined (Hamburg, Rotterdam, Tilbury and Zeebrugge):

- One of the operations (Rotterdam) was much larger in scale than the combined Australian declared ports, and one much smaller (Tilbury, which was the only enclosed port reviewed, i.e. within a lock system and so towage intensive)
- two of the four ports (Tilbury and Zeebrugge) depended on a single provider, both of whom deployed their local towage fleet across a number of market sectors besides the port reviewed.
- Rotterdam and Hamburg are intensely competitive, with three service providers all serving a range of north continent ports. Both are relatively unregulated markets that have seen between them the entry of three new operators in the last five years and one departure. All belong to groups of marine service providers with a range of activities outside harbour towage.
- Service providers in Rotterdam are obliged to provide a similar range of related capabilities on their tugs, where as Hamburg vessels are dedicated to harbour towage alone
- Service norms and standards are comparable to Australia, as were tug utilisation rates

1.5 Harbour Towage in North America

The operations reviewed (LA, Seattle and Philadelphia) are all in fact twin ports and were examined on this basis.

- In harbour towage business scale LA/Long Beach is more than half that of the combined declared Australian ports, while Seattle and Philadelphia are about the same as Newcastle or Brisbane
- As with the declared ports, all these operations and the service providers (who number two well established operations in each case plus a newcomer in LA) operate under a single Federal jurisdiction and Maritime body (FMC), who require US flag and manning. Otherwise the market is largely unregulated.

- Virtually all the service providers reviewed are strong harbour towage operations with a network of port work the length of either the Pacific or Atlantic coasts of the continent, similar to Adsteam. By contrast they also have a strong coastal marine transport capability, particular tug and barge and related services.

- Service standards, other than LA, are not as high as Australia, with longer lead times on service bookings and penalty free cancellations, and higher manning scales.

- In terms of productivity tug jobs per call are similar to the Australia.

1.6 Conclusions

The prime outcomes of this benchmarking of Adsteam's harbour towage in the seven declared ports v. that prevailing in the selection of overseas ports are:

- The Australian market is geographically fragmented and as with the container terminal business is never likely to achieve the critical mass of a HK or Singapore and the related operating efficiencies. In geographic spread it is more akin to the US than Asia

- Most overseas harbour towage operations are part of larger marine service or terminal groups, and constitute one element in a service portfolio or even a support activity to another core business (e.g. Klang and Auckland)

- By force of geographic circumstances the Adsteam towage fleet is not as well utilised as those in the world's largest ports, but at 2 – 3 jobs per tug day is operating at a level similar to North America.

- In terms of jobs per call it is also achieving ratios similar to North America as well as Klang – in the range of 3 per call.

- Like towage fleets elsewhere it has recently completed a significant upgrading of its fleet capability to service the needs of shipping line customers, who operate ever larger vessels, a factor which tends to dampen growth in ship calls. This together with greater sophistication of steering systems outweighs any increased demand for more harbour towage from larger ships.

- In a market that is not growing at best and where competition is rampant in most sectors, there is real pressure on revenues and returns.

- The perennial quandary of the industry is that shipping line customers demand total reliability of and unfettered access to service with excellent hardware in difficult weather conditions; but for the rest of the time they are doing everything possible to reduce operating costs, including use of and expenditure on towing services, in pursuit of their own lowest possible operating costs. In short safety and security are always the first priority as long costs are minimised at the same time!

2 PROJECT BRIEF

In 1991, the provision of harbour towage at seven major Australian ports (Adelaide, Brisbane, Fremantle, Melbourne, Newcastle, Port Botany and Port Jackson) was made a "declared service" under the *Prices Surveillance Act* 1983 ("PSA"). Since that time the Australian Competition and Consumer Commission ("ACCC") has to be notified of any intended price increases for harbour towage services in the declared ports. This declaration has been extended twice and is currently due to expire in September 2002.

In accordance with the declaration, Adsteam Marine notified the ACCC pursuant to Section 22(2)(a) of the PSA of intended harbour towage price changes in five of these ports (Fremantle and Newcastle were not included) on January 30th 2002

On 20 February 2002, the ACCC objected to these increases but endorsed the then prevailing Adsteam Harbour Towage pricing structure. On the same day the Parliamentary Secretary to the Treasurer referred Harbour Towage and Related Services to the Productivity Commission for inquiry, hearings and reporting within 6 months.

The purpose of the enquiry is to examine whether declaration of harbour towage services continues to be appropriate, and to recommend alternative arrangements where justified. The scope of the inquiry is primarily to report on:

- The impact of structural reforms on the provision of harbour towage and related services
- Measures that could be taken to increase competition in harbour towage
- Any continuing need for price oversight over harbour towage services.

Relevant submissions from interested parties are required by the Productivity Commission no later than 19/4/02. Adsteam Marine plans making detailed submissions, of which it is intended this independent international harbour towage benchmarking Study be part.

The primary objective of this report is to establish how Adsteam Marine's harbour towage business and service standards have changed over the last five years (1996/97 to 2000/01) in the seven declared ports of the PSA, i.e. Adelaide, Brisbane, Fremantle (Inner Harbour), Melbourne, Newcastle, Port Botany and Port Jackson. Secondly it aims to compare current harbour towage service standards in a range of overseas ports (5 in the Asia Pacific Region, 3 in North America and 4 in Europe) with each other and with Adsteam's declared port operations. The overseas ports were selected to provide a range in scale from the world's largest (with the greatest opportunity for efficiencies) to some of comparable size to the Australian declared ports. Other criteria in their selection were relative importance to Australian foreign trade and provision of a wide range of shipping services.

It should be noted that for the purposes of this study, harbour towage is defined as towage services provided for the berthing, shifting or unberthing of ships in the relevant port, and does not include other tug and barge operations.

The **Australian** part of the research focuses on:

- The size and growth trends of ship calls in the seven declared ports (the potential market)
- The size and growth trends of ship calls requiring harbour towage in those ports (the actual market)
- The towage fleet operated by Adsteam in providing those services
- The manning levels applied by Adsteam in this service provision
- The level of service provided to shipping line customers and related service delivery mechanisms
- The identification and measurement over the period of relevant significant productivity variables.

The **international** section of the required benchmarking focuses on:

- The local harbour towage industry profile (i.e. number of operators, geographic and service range of their operations, size and type of tug fleet, related crewing, and industry vessel sharing arrangements).
- The local harbour towage market profile (i.e. market size in terms of vessel calls and tug jobs, tug capacity to service the market, and selected performance ratios)
- The harbour towage service provided in the identified ports (availability, service delivery methods and conditions – both internally generated and externally imposed – and methods and degree of consultation with stakeholders)
- Degree of market contestability (including evidence of ease of industry entry and of rationalisation, and any identifiable trends in financial reward for participation)
- Degree of industry regulation (including licensing, control of tendering and pricing, vessel standards, service provision, manning levels, provision of subsidies etc).

The information collected was sourced from relevant port authorities/corporations, local harbour towage operators and the relevant government organisations. It should be noted that in the event it proved impossible to obtain anything but the most general outline information on harbour towage in Yokohama, and the quality of the information on Auckland and Zeebrugge is less complete than for the other nine ports owing to concerns held by the local towage operator about the commercial sensitivity of the information requested.

3 AUSTRALIAN HARBOUR TOWAGE

3.1 MARKET PROFILE IN DECLARED PORTS 1997 - 2001

3.1.1 Vessel Calls

The potential market or total calls of all ships including those not requiring towage assistance in the seven declared ports reviewed have scarcely changed over the five year period, with compound annual growth of only 0.3% p.a.(refer Table 1 below):

Table 1: Australian Declared Port Total Ship Calls 1996/97 – 2000/01

PORT	1996/97	1997/98	1998/99	1999/00	2000/01	% +/- p.a.
Adelaide	991	991	924	915	997	+0.2
Brisbane	2050	2107	2187	2355	2271	+2.6
Fremantle	1677	1706	1809	1650	1650	-0.4
Melbourne	2882	2912	3050	2946	2868	-0.1
Newcastle	1560	1710	1649	1593	1514	-0.7
Pt Botany	1263	1264	1242	1257	1207	-1.1
Pt Jackson	1098	1075	1089	1184	1136	+0.9
Total	**11,521**	**11,765**	**11,950**	**11,900**	**11,643**	**+0.3**

Source: Port Corporations

A full breakdown by ship type and percentage growth is given in Appendix A. It is worth noting that the two largest vessel categories account for 57% of the total (container vessels 32% and dry bulk 25%) in the latest year compared with 50% precisely in 1996/97.

3.1.2 Towage Demand

Actual towage demand, ie vessel calls requiring tug services, in the same period rose some 3.3% or at a compound rate p.a. of 0.8%, largely due to significant growth in Brisbane (refer Table 2 below).:

Table 2: Australian Declared Port Calls by Vessels using Towage Services 1996/97 – 2000/01

PORT	1996/97		1997/98		1998/99		1999/00		2000/01		% +/- p.a.
Adelaide	694	70.0	686	69.2	699	75.6	658	71.9	699	70.1	+0.2
Brisbane	1570	76.5	1627	77.2	1781	81.4	1979	84.0	1918	84.5	+5.1
Fremantle	912	54.4	923	54.1	1007	55.7	867	52.5	880	53.3	-0.9
Melbourne	1836	63.7	1783	61.2	1954	64.1	1876	63.7	1786	62.4	-0.7
Newcastle	1223	78.3	1335	78.1	1253	77.6	1197	75.1	1231	76.3	+0.2
Pt Botany	1172	92.8	1200	94.9	1196	96.3	1230	97.8	1173	97.2	Nil
Pt Jackson	830	75.6	850	79.1	865	79.4	883	74.5	823	72.4	-0.2
TOTAL	**8237**	**71.5**	**8404**	**71.4**	**8755**	**73.3**	**8690**	**73.0**	**8510**	**73.1**	**+0.8**

Source: Adsteam Marine

The left-hand side of the column in Table 2 is the number of ships requiring towage and the adjacent column is the percentage of all vessels as per Table 1. From this you can see that the total number of vessel calls serviced by tugs increased marginally from 71.5% in 1996/97 to 73.1% at the end of the period. It should be noted the Fremantle tug job volume is compared with the total Inner and Outer (Kwinana) harbour movements, which is how the Fremantle Port Authority supply call statistics. Since it is only Fremantle (Inner Harbour) that is a declared port, this results in a relatively lower percentage figure than for other declared ports.

A full breakdown of vessel calls at declared ports by ship type is given in Appendix B. Again container vessels dominate, accounting for nearly 43% in the latest 12 month period. It is also worth noting that in the same five year period the size of the largest container vessels serving Australia has effectively increased by 40% from 2,900 Teus to 4,100 Teus (P&O Albatross class entering service this year with 10 vessels in the US East Coast and European trades).

Demand for towage services has remained fairly consistent over the review period, but these figures do not reflect the reduction in the number of tugs required for each ship move due to improved manoeuvrability aids such as bow thrusters being fitted on modern ships. In this context, however, it should be noted that the number of tug jobs completed in the declared ports in 2000/01 was 28,713, a decline of some 6 % in a two year period from a peak of 30,545 in 1998/99 on a comparable operational basis. Refer Appendix C.

3.2 TOWAGE CAPACITY IN DECLARED PORTS

3.2.1 Size of Tug Fleet

Adsteam operated a total of **31 tugs** across the seven declared ports in 2000/01 by comparison with 33 in 1996/97. The reduction in two tugs has been in Newcastle as a result of the acquisition of Hunter Towage from BHP and its partners, and dispensing with two operational tugs in that port. There has been no other reduction of tugs in other declared ports as result of Adsteam Marine taking over other towage providers. For most of the period in most ports the largest, most powerful tugs were 47 ton bollard pull, 3,600hp, with just 6 of the fleet (18% of the total) exceeding this limit in terms of horsepower - hp.

However, there was a significant upgrade of the fleet (the first for 10 years) with the introduction of 6 x 4800 hp 60 ton bollard pull Z-Peller tugs in 2000 - Sydney (2), Melbourne, Brisbane, Adelaide and Fremantle. They replaced older, less powerful and less manoeuvrable vessels. These latest additions to the fleet are comparable in power, bollard pull and manoeuvrability with the world's best in harbour towage and now account for 32% of the declared port fleet based on 60 ton bollard pull and 39% based on 4000 hp.

With this fleet upgrade in 2000/1, the change in the average profile of the fleet of 27 harbour tugs operated by Adsteam (excluding back-up tugs) in the seven declared ports is clearly demonstrated in Table 3:

Table 3: Adsteam Average Harbour Tug Profile

	Age (years)	Bollard Pull	Horse Power
Prior Upgrade	17	47	3600
After Upgrade	12	52	4000
% Change	- 29.4	+10.6	+11.1

Source: Adsteam Marine

Of the current fleet of 31 tugs in declared ports, **27 are operational** and crewed up. In 2000/1 the available capacity of these vessels was 10,420 tug days, a reduction of 5.5% since 1996/7 (refer Appendix C). The other **4 are back up** tugs that are in place to provide contingent towage capacity on an as required basis; 1 back up tug in each of Brisbane, Fremantle, Melbourne and Port Jackson. These back up tugs are:

- not crewed up unless operational;
- employed to maintain the towage service in their home port when other tugs in the port are dry docked or are laid up for maintenance;
- employed to maintain the towage service at their home port when any other tug in that port is called away on other business e.g. salvage work;

- employed to maintain the towage service at other ports when tugs at that port are out of service or off station for any reason e.g. dry docking, maintenance, salvage work.

More comprehensive particulars of the tug fleet (power, bollard pull, fire fighting and salvage equipped vessels) are set out in Appendices D & E.

In this context it should be noted that between 1/1/99 and 31/3/2002 United Salvage, the Adsteam subsidiary dedicated to salvage operations around Australia, has undertaken 25 salvage jobs. In completing these tasks, 15 tugs were in attendance from declared ports on 13 occasions - ex Melbourne on 6, Sydney 4, Fremantle 3 and Brisbane on 2 occasions each.

3.2.2 Crewing

Tugs operate with a crew of 3 (Master, Engineer and Deckhand), or 4 (with an additional Deckhand) on each operational vessel.

There has been a significant reduction in manning across the declared ports from 326 in 1996/97 to 273 in 2000/01; a reduction of 16.3%. In addition there has been a further reduction of 35 men during the current 2001/02 year, a total of 27% since 1996/97.

This reduction has been due to the Adsteam Marine initiative of reducing crewmen per tug shift from 4 to 3 through the reduction of one deckhand where the tug is equipped with a main towage winch; those tugs which have a manual capstan winch require the additional deckhand. In the 2000/01 year 17 of the 27 operational tugs operated with 3 crewmen per tug per shift; during the 2001/02 year this reduced manning has been introduced to a further 8 tugs, making 25 in all.

The back up tugs when deployed require a crew of 4 as they do not have a main towage winch, which necessitates engagement of casual deckhands.

With the type of tugs employed having a number of years of operational life remaining, there does not appear scope for further manning reductions. Further manning reduction would appear possible only through changed tug and crew rostering arrangements, delivering a requirement for less crew to be on duty in any 24 hour period, always commensurate with a 24 hour towage service availability being maintained.

Casual Labour is employed to cover for absence of permanent employees caused by illness/sick leave, workers compensation, accumulated leave and long service leave. Use of casual labour is minimised to best possible effect within the scope and conditions of the relevant EBAs; ongoing EBA negotiations will strive for further flexibility of permanent personnel (e.g. between Port Jackson and Port Botany) to further minimise the need for casuals. When tugs go off station to provide other port relief, personnel are provided by the recipient port out of the crews normally used to man the tug that the relief tug is replacing. But when tugs go off station for deep sea e.g. salvage work, they normally take a large percentage of their port crew with them so that casuals are required to ensure full manning of the relief tug in the port concerned.

From information available it is estimated that on a man year basis 19 casuals were used across the declared ports in the 2000/01 year in addition to the 273 permanent personnel. This represents just under 7% of the total seagoing personnel deployed.

A break up of crew employed by port is supplied in Appendix D.

3.3 SERVICE PROVISION IN DECLARED PORTS

3.3.1 Structure

Adsteam Marine provides a towage service 365 days a year, 24 hours a day across the declared ports. The exception is Adelaide where there is no service after 1400 hours Christmas Eve, after 0800 hours Christmas Day, and between 1400 hours and 0800 hours New Year's Eve and New Year's Day.

Bookings for towage services are made by the ships' agent centrally through the port authority/harbour control in Adelaide, Melbourne and Sydney Ports (Botany and Jackson), and directly with the towage company in Brisbane, Fremantle and Newcastle. The benefit of a centralised system is that it aligns all service requirements on a 'one stop shop' basis and avoids towage service booking conflicts.

Most ports require 2 hours lead time for booking of services, although Brisbane and Melbourne require none and Port Jackson and Port Botany have no lead time requirement in ordinary office hours Monday to Friday.

A similar situation exists for changes to bookings. A fee is charged if towage services are booked and subsequently cancelled after the tug(s) have left base to meet the booked vessel. However, there is no cancellation fee in Brisbane or Fremantle irrespective if tugs have left base. In Fremantle there is no charge even if a tug turns to as ordered and the pilot determines that the capabilities of the ship are such that the tug is then dismissed.

There are regular meetings between shipping companies and port service providers through established port users groups in Brisbane, Fremantle, Newcastle and Sydney, whereas only irregular meetings are held in Adelaide and Melbourne.

The tugs operating in Brisbane, Fremantle and Melbourne have on board quality assurance certification to ISO9002 standards. There is no formal on board QA for tugs in Adelaide, Newcastle, Port Jackson or Port Botany, although there is ISO9002 certification in each of those offices, which does have an indirect beneficial effect on tug operations. All tugs will acquire formal on board ISOQAR during 2002.

Further detail is supplied in Appendix E.

3.3.2 Controls

The number of tugs required for each harbour move is determined at each declared port by the Port Guidelines which are formulated by Port Authorities and/or pilots. The guidelines take into account such factors as ship size, weather conditions, whether the ship has to swing etc in stipulating the number and type of tugs required for the

particular move. The type and bollard pull of available tugs can be a factor in determining the number of tugs required for a particular harbour movement. For example in Port Jackson tugs are categorised as 'A' and 'B' dependent, upon their bollard pull, and here it can be possible to replace two less powerful 'B' tugs with one 'A' tug.

Port Guidelines are continually evolving as certain types of new ships are being equipped with bow thrusters, stern thrusters and controllable pitch propellers to improve their manoeuvrability. This in turn leads to a reduction in the requirement for towage assistance, which is determined by these capabilities. The pilots at Brisbane, Fremantle and Melbourne show flexibility in applying the guidelines and depending on prevailing conditions may reduce recommended tug numbers for the job concerned; nevertheless, if weather conditions are adverse and/or ship capability not as expected they will enforce the guidelines. The pilots at Adelaide, Newcastle, Port Botany and Port Jackson tend to enforce more rigidly the guidelines as to number of tugs required.

Notwithstanding the flexibility in enforcement of guidelines, tug availability must be able to serve the stated guideline requirement in the event of adverse weather and/or less than expected ship manoeuvring capability.

3.4 PRODUCTIVITY & EFFICIENCY IN DECLARED PORTS

3.4.1 Tug Jobs per Ship Call

This ratio is derived by dividing the number of tug jobs undertaken by the number of vessel calls, to produce a figure depicting the average number of tugs used to allow each ship to enter and leave the port. While this ratio is useful for comparing on a historic basis the productivity trends of towage operations in a given port, it is of less value in comparing one port with another due to operational differences, particular if there are specific port service guidelines, and differences of harbour and terminal marine configurations. Changes in the business mix can also influence this ratio (e.g. an increase in the number of ship calls attributable to vessels with high manoeuvrability will reduce the ratio, whereas an increase in car carriers which are very susceptible to windy conditions will do the opposite) Likewise the horse power, bollard pull capacity and type of tug deployed will influence this ratio.

By this measure there has been significant productivity improvement across the range of declared ports between 1996/97 and 2000/01, reducing on average from 3.66 jobs per ship call to 3.37, i.e. a reduction of 8.6% (port by port details are at Appendix C & D). This is the result of evolving port guidelines reflecting improved ship manoeuvring capabilities and to some extent the flexibility of pilots in enforcing the guidelines under favourable marine/weather conditions. More versatile tug capability is another factor.

3.4.2 Tug Jobs per Tug Day

This ratio is derived by dividing the total number of times that tugs were deployed in the year by the total available tug days in the local fleet. Again this ratio is of value in looking at historic productivity trends, but should be used with caution in comparing different ports as the duration of a tug job is influenced by local port and terminal

configurations and the distance of the tug base from the location where delivery of the towage service occurs.

During the five year review period there was only a slight increase in jobs per available tug day from 2.74 to 2.76, or 0.7% in the seven ports. In most ports there was a reduction in jobs per tug day (particularly in Fremantle, Melbourne and Botany), offset by substantial increases in Brisbane (10.9%) and Newcastle (30.1%).

3.4.3 Overall Productivity

It is worth noting that from 1996/97 to 2000/01 there was an overall 10% improvement in productivity in the declared ports as a consequence of an increase in business volume and a decrease in towage capacity:

- Calls Handled +3.3%
- Tug Days -5.48%

3.4.4 Labour

As mentioned in paragraph 3.2.2 Adsteam has achieved significant manning reductions in the review period from 326 in 1996/97 to 273 in 2000/01, or 16.3%, with a further reduction of 35 personnel during the current 2001/02 year. This equates to a 27% reduction on seagoing manpower between 1996/97 and March 2002.

Total tug jobs dropped from 30,159 in 1996/97 to 28,713 in 2000/01 (5%), but in personnel productivity terms this translates as an increase from 92.5 to 105.2 jobs per crewman, an increase of 13.7%. Such ratios critically depend on the size, propulsion method and power of the tugs deployed.

Overall, crew numbers employed (excluding casuals) per operational tug fell from 10.87 at the beginning of the five year period to 10.11 at the end, a reduction of 7%. Again port by port details are given in Appendix C.

4 ASIA PACIFIC HARBOUR TOWAGE

Five ports were surveyed in the Asia Pacific region – Singapore, Hong Kong (two of the world's largest), Auckland, Port Klang, and Yokohama. All but Klang are ports with relatively straightforward navigable access, and the first three act as significant regional cargo logistics hubs. Singapore is tightly regulated while Auckland and Hong Kong are the opposite. Singapore and Auckland are highly integrated (as opposed to landlord) ports, while in Hong Kong, apart from operational and safety oversight from the Marine Department, port operations are entirely a matter for the private sector. Findings are tabulated in Appendix F.

4.1 TOWAGE PROFILE

4.1.1 Operators

Eleven operators were included in the survey in five ports as follows:

- Singapore (4) – PSA Marine, Keppel Smit, Jurong Marine Services and Marina Offshore
- HK (3) – HK Salvage and Towage, Yiu Lam Tugs and South China Towing
- Port Klang (2) – Klang Multi Terminal and North Port
- Auckland (1) – Ports of Auckland Marine Services
- Yokohama (3) – Nippon Kaiyosha Ltd, Tokyo Kisen Co. Ltd, Daito Corporation.

The focus of each of these businesses is primarily harbour towage in its home port. In the case of both Singapore and HK, flag discrimination prevents direct operation of such services in neighbouring ports under different flag jurisdictions.

4.1.2 Fleet

The largest tug fleet (94 vessels) among these ports is found in Singapore, where there is significant additional work over and above harbour towage, derived from the Republic's extensive shipbuilding and repair industry. Also from line haul tug and barge work. HK is the next largest with 34 tugs, but flag rules prevent operators from providing services to/from/in PRC.

- In all but Klang the operators have a significant first call salvage capability
- All but HK have firefighting capability
- Pollution response capability is only required in HK.

4.1.3 Other Services

In three ports (Singapore, Klang and Auckland) one or more of the major towage operators is part of a group providing terminal and cargo handling services, as well as pilotage. The last two also provide mooring as a separate service. Two operators in both HK and Singapore are part of a shipbuilding and repair group, while the other in HK and one in Yokohama are affiliated with two of Japan's leading shipping groups (Mitsui and NYK respectively).

4.2 MARKET PROFILE

4.2.1 Vessel Calls

Relevant vessel calls (i.e. excluding regional ferry and local tug and barge operations which do not require harbour towage) ranged from in excess of 60,000 in Singapore to 48,000 in Yokohama (75% of which were coastal), 36,000 in HK, 13,000 in Klang and 1,800 in Auckland.

4.2.2 Towage Demand

To the degree that it was possible to establish, numbers of tug jobs in these ports were approximately double the ship calls in Singapore (110,000) and HK (65,000) and nearly three times in Klang (36,000) – a port with a complicated estuarial marine access (channel draft and width). Auckland has similar navigational constraints but it was not possible to establish towage jobs undertaken.

4.3 SERVICE PROVISION

4.3.1 Structure

All ports surveyed provided harbour towage on a round the clock basis 365 days a year.

Arrival data was in all cases sourced from the agent of the vessel in question but was then input to a centralised data system (Maritime Port Authority in Singapore, Marine Dept Vessel Traffic Management System in HK, Yokohama Port Authority and the terminal operator's system in Klang and Auckland.

Only Klang operates a significant vessel priority system (container, draft restricted, passenger and naval vessels in that order).

Lead time for towage bookings was normally between 1 and 2 hours, and the same for changes or cancellations without penalty, although in Auckland and HK there was little or no effective lead time for either.

4.3.2 Controls & Quality Assurance

Both Singapore and Klang have specific port service guidelines relating to the use of tugs in berthing and unberthing, while HK and Auckland leave this decision to the ship Master and Pilot.

Consultation on service and potential price changes is only formalised in Singapore with the local Shipowners Association. Elsewhere it is on a bilateral basis between the towage provider and the client.

ISO 9002 certification is the norm for harbour towage operations in the region

4.4 PRODUCTIVITY

4.4.1 Tug Jobs per Ship Call

Tug jobs per call are just under 1.8 in both HK and Singapore. Klang is substantially higher at 2.9 owing to the complexities of the marine access at that port. Auckland refused to disclose the necessary information to calculate this and all other productivity ratios, judging it to be commercially sensitive.

4.4.2 Tug Jobs per Tug Day

For the international ports 360 days p.a have been used to calculate this performance ratio (on the assumption tugs are out of service for dry dock every 2 years for 10 days). Again,HK and Singapore achieved similar very high vessel utilisation at just over and just under 6 jobs per tug day respectively. Klang claimed to be even higher at 8 but it has not been possible to verify this figure independently.

4.4.3 Labour

Both Klang and HK harbour tug manning is 4, while Singapore is 3 and Auckland 2 or 3 depending on the type of tug.

Numbers of crews per tug also varies from 2 in Singapore and Klang to 3 in Auckland and 4 in HK.

4.5 COMPETITION

4.5.1 Government regulation of entry to the industry, pricing and competition.

Singapore - PSA was the monopoly provider of towage services until 1997. The Marine and Port Authority of Singapore ("MPA") then introduced a three phase liberalisation package up to 1999, resulting in the issue of 6 Ship Towage (ST) licences to cover

berthing and unberthing and towage within the harbour limits (container, conventional and cruise berths only). The validity of each licence is 30 years. The MPA require annual inspection of licensees' vessels and monthly reporting of performance.

Towage pricing is controlled by a published MPA tariff that defines the maximum that can be charged based on ship size (Gross Tons or GT) per tug. There is a base charge for the first hour that varies in accordance with the GT of the vessel from $330 for vessels of less than 2,000 GT to $1,260 for vessels in excess of 100,000 GT. The tariff defines additional charges for every subsequent half hour or part thereof. This tariff was set in 1997 and has remained unchanged for 5 years.

Hong Kong – There are no licence requirements for entering the industry, nor any regulatory impediments to tug operators providing towage services in ports, nor any price controls. Competitive market conditions have effectively frozen prices since 1990.

Auckland - There are no licence requirements for entering the industry in New Zealand and there are no regulatory impediments or price controls.

Port Klang – Towage pricing is controlled by the port authority and has not changed significantly since 1966.

Yokohama – there are no licensing restrictions on harbour towage in the port, nor any government controls over pricing.

4.5.2 Market Contestability

Singapore – Contestability is constrained by the ST licensing arrangements. No new licenses have been issued since 1998 and intense competition has seen reduced profitability. However, there has been no deterioration in service levels. Tugs are now depreciated over 20 years as a means of bolstering profitability, which is under significant downward pressure. Two of the original licence holders have been absorbed by competitors - Maju Maritime (a joint venture between Keppel and Smit International) was merged with Keppel Smit in August 1999 and the Sembawang towage activities were acquired by PSA Marine in June 2001.

Hong Kong – This port has a highly competitive tug sector, with 3 operators, one of which is a joint venture between PSA Marine, Mitsui OSK and Tokyo Kisen. The AP Moller group also entered the market several years ago but after losing money this operation was acquired by the market leader, HK Salvage and Towage, a joint venture between Hutchison Whampoa (also the prime container terminal operator in HK) and the Swire Group.

Auckland – Harbour towage is provided by a division of the Ports of Auckland ("POAL") effectively on an exclusive basis since POAL captured the harbour towage business of the RNZ Navy from a tug and barge competitor. Contracts with customers are bundled with terminal services, navigation fees, light dues, wharfage rates and mooring in the case of container lines and as bundled marine services with conventional carriers, who use other private sector stevedores for cargo handling.

Port Klang – We have been advised that the regulation of tug operations servicing the port authority's berths and a policy of restricting other tug licenses to companies operating tugs purely to service their private berths ensures that there is little effective competition in the port.

Yokohama – Harbour towage is provided via three operators, Nippon Kaiyosha Ltd, an affiliate of NYK, Japan Kisen Co Ltd, Japan's largest towage company with a fleet of 27 vessels and listed on the Tokyo market's second board, and Daito Corporation.

4.6 OTHER REGULATION

4.6.1 Manning and Community Services

Singapore - Crew numbers and qualifications are regulated by the MPA and are structured according to tug GT for deck manning and shaft power for engine room crew. Maximum ratios of non-Singaporean crew members are also regulated. The ST licence stipulates equipment levels for marine pollution response including pump, dispersant and inductor/hose requirements. Tug operators are not required to collect any consumption tax surcharge on their invoices.

Hong Kong – Apart from observing international conventions such as STCW, the Marine Department does not regulate crewing levels or wages. There are no requirements to provide firefighting and/or marine pollution response capability ("ancillary services ") or to collect any consumption tax surcharge.

Auckland – The NZ Marine Safety Authority ("MSA") generally requires 3 crew per tug unless the tug is specifically designed for 2 man operations and can demonstrate appropriate safety systems in place in accordance with IMO Resolution A.890(21). Pollution response is in the hands of the local Regional Council. All towage services on both international and domestic vessels is subject to GST at 12.5%

Port Klang – We have been advised that manning levels are regulated under federal law. Also, that port regulations require tugs to be fitted with firefighting capacity but not marine pollution response or salvage capability. There are no regulations requiring the imposition of a consumption tax surcharge.

4.6.2 Subsidies

Singapore – There is no Government subsidy for fuel in Singapore. Assets can be depreciated for tax over 3 years; this applies to all capital expenditure across all industry sectors. However, tugs are depreciated for accounting purposes over 20 years.

Hong Kong – There is no subsidy for diesel fuel and no fiscal support measures for the towage industry.

Auckland – There are no subsidies provided to the tug industry.

Port Klang – There are apparently no Government subsidies for diesel fuel and Government fiscal support measures for the industry are said to be minimal.

Yokohama – there are reported to be no subsidies of harbour towage.

4.6.3 Port Authority Tendering and Control

Singapore – Licensing arrangements are described in 4.5.1. above. The MPA has the power to control tug specifications, pricing, manning levels and service standards. As a licence condition, operators are expected to achieve on time performance (defined as arriving within 15 minutes of booked time) at a level of at least 95% of tug jobs. Performance against this standard has to be reported monthly. The MPA does not control work practices or customer satisfaction issues.

Hong Kong – There are no exclusive licenses and no constraints on the industry. Furthermore there do not appear to be any controls over tug specifications, pricing, work practices, or customer satisfaction but service standards are prescribed through berthing guidelines issued by the Marine Department.

Port Klang – Towage licenses are automatically issued to the lessees of the two main port terminals, Northport and KMT for the duration of the lease. These run for 21 years from 1992 and for 30 years from 1994 respectively. We are advised that the port authority does supervise manning levels as stipulated under Federal law, and that the port regulates work practices and service standards and reviews towage customer satisfaction levels.

5 EUROPEAN HARBOUR TOWAGE

Four ports were surveyed in Europe: Hamburg, Rotterdam, Tilbury and Zeebrugge. All except the latter are effectively river ports and Tilbury is largely an enclosed port with a system of lock gates. Zeebrugge is also a major North Sea ferry port, where a large number of vessels enter and leave without harbour towage assistance. Rotterdam and Hamburg are the two largest North Continent ports acting as cargo gateways for North West Europe, with a series of terminals and operators, while Tilbury and Zeebrugge are smaller scale and more specialised.

5.1 TOWAGE PROFILE

5.1.1 Operators

A total of 8 operators were surveyed in the 4 ports as follows:

- Hamburg (3) – Fairplay, Kotug and Bugsier (part of the same group as Fairplay)
- Rotterdam (3)– Smit International, Kotug and Fairplay
- Tilbury (1) – Adsteam Marine
- Zeebrugge (1) –URS (49% owned by Smit)

The European North Continent is fiercely competitive with Fairplay and Kotug operating in two of the ports surveyed as well as others such as Rostock and Bremerhaven, and Smit in both Rotterdam and Belgium via URS (and until recently Hamburg as well). UK to date has escaped the worst pressures of European competition, and Adsteam operate from most major UK ports.

5.1.2 Fleet

Rotterdam has a harbour towage fleet of 30, and is dominated by Smit International, who boast a world wide harbour/coastal towage fleet of over 300 vessels, apart from specialist salvage and offshore oil and gas craft. Hamburg's towage fleet at 16 is half the size of Rotterdam and Tilbury (8) and Zeebrugge (on average 6) are half or less than that of Hamburg.

- The Rotterdam fleet have first call salvage, firefighting and pollution response capabilities
- Tilbury has first call salvage and firefighting but not pollution response capabilities
- Hamburg has dedicated harbour towage vessels.
- Zeebrugge tugs include salvage, pollution response and offshore supply capability

5.1.3 Other Services

Smit International is one of the world's largest, most integrated marine service groups, providing a wide range of small vessel services including deep sea salvage, offshore oil and gas services, heavy lift, fleet management and tug and barge operations. It has joint ventures in ports as far apart as Belgium, Vancouver, Cape Town and Singapore. The other operators on the North Continent all have similar but much smaller scale diversified marine business bases, while Adsteam in UK, as in Australia, is largely confined to harbour towage.

5.2 MARKET PROFILE

5.2.1 Vessel Calls

Rotterdam is the largest port surveyed (19,000 estimated calls excluding river traffic) followed by Hamburg and Zeebrugge with over 10,000 each, although nearly a third of the latter are North Sea ferries. Tilbury is much smaller with 700 ship calls p.a.

5.2.2 Towage Demand

Demand for towage services cannot be enumerated precisely as it is seen to be sensitive commercially. As in Auckland, Zeebrugge refused to disclose this information. Rotterdam is estimated to be about 23,000 and Hamburg some 15,000 jobs p.a. Tilbury generates some 3,700 jobs or more than 50% of those undertaken by the Adsteam fleet on the River Thames. In general terms, the NW European market is estimated to be stable or declining.

5.3 SERVICE PROVISION

5.3.1 Structure

In all ports surveyed round the clock towage services are provided 365 days a year.

Other than at Tilbury, ship arrivals are recorded in the port traffic management or reporting system.

There are no vessel priorities other than in Hamburg where deep draft vessels have priority if they are likely to be tidally restricted.

Tug booking lead times and changes or cancellations in Rotterdam are very flexible owing to the level of competition. In Hamburg bookings and cancellations without penalty are supposed to be made not less than 2 hours prior, while in Tilbury it is 6 and 4 hours respectively.

5.3.2 Controls & Quality Assurance

Pilots and Masters have discretion over the use of tugs in all cases other than tankers in Rotterdam and future movement of vessels using the new Altenwerder berths in Hamburg. Tilbury operates within the voluntary PLA code on service standards.

Consultation on pricing and service is undertaken in Tilbury with the Association of London Shipowners, while in Rotterdam there is a service providers committee and in Hamburg pricing is discussed by the Hamburg Arbeitsgemeinschaft der Seeschiffsassistenzenreederei (Towage Working Group).

5.4 PRODUCTIVITY

5.4.1 Tug Jobs per Ship Call

Data was not obtainable for this measurement in Rotterdam and Zeebrugge, while Hamburg was as low as 1.3 and Tilbury as high as 5.3 – owing to the need for most ships to negotiate the lock system on entry and departure.

5.4.2 Tug Jobs per Tug Day

Jobs per tug day in three of the ports where it was obtainable ranged from a low of 2.13 (Rotterdam and Tilbury) to a high of 2.6 (Hamburg)

5.4.3 Labour

Crews are 3 men on the North Continent and 4 in UK. Numbers of crews per tug varied from a low of 2 crews for Kotug in Hamburg, 2.5 in Rotterdam and 3 in UK.

5.5 COMPETITION

5.5.1 Government regulation of entry to the industry, pricing and competition.

Tilbury - In the UK there is no license requirement to provide towage services and no control over towage pricing. As evidence of this, Adsteam took over the in harbour (within the lock system) services previously provided by the Port, since when it has had an effective monopoly in the port. Similarly there are no regulatory impediments to ship operators providing towage services in ports. Like all signatories to IMO conventions, the UK legislative framework includes marine safety and environmental regulations that fall outside the scope of this study.

Hamburg - The position appears to be similar to the UK with no license requirements to enter the towage industry, no control over towage pricing and no regulatory impediments to prospective towage service providers in the port. Kotug entered the

Harbour Towage sector in the port in 1996 and Smit two years later in retaliation for German penetration of the Dutch towage market. Government regulation is restricted to marine safety and environmental issues and to a language requirement that those employed in the harbour can communicate in German and have a level of local knowledge.

Rotterdam - There are apparently no license requirements and no regulatory impediments to prospective towage service providers – the German Fairplay group entered the market in 1998. Similarly, there are no pricing controls.

The same is true for **Zeebrugge**, although we understand that the port authority effectively precludes competition to URS, the sole supplier (49% owned by Smit International), by allegedly refusing to provide tug berths to outside suppliers. This situation would appear to be contrary to EU directives on market access to port services (refer Section 5.5.2 below).

5.5.2 Contestability

In **Tilbury**, the UK in general, **Hamburg** and **Rotterdam** there are no regulatory barriers to entry into the industry, producing a market that is generally highly competitive. Smit International's entrance and exit within three years of the Hamburg market is clear testimony of this situation. A further indication is the introduction of 2 x 3 crew manning by Kotug in Hamburg, despite union pressures to the contrary. Carriers now encourage tug owners to provide services in more than one port, and Kotug in the last couple of decades has brought new dimensions to competition when it entered harbour towage successively in Hamburg, Rotterdam and most recently Bremerhaven. In the meantime ports pressurise tug operators to lower their tariff to help attract or retain a carrier as a port customer. As a result towage prices in Rotterdam have remained unchanged since 1988.

In **Zeebrugge** and in Belgium generally, there appears to be no effective competition, but equally no formal barriers. *This position may change under evolving EU policy on market access.*

The amended proposal for a EU Directive On Market Access to Port Services (issued 19.2.02) seeks to ensure freedom for providers of port services to have access to port installations to the extent necessary for them to carry out their activities. ,
A central feature of the Directive is that there be full transparency of all procedures relating to the provision of port services, including the provision of appeal procedures. It also provides transitional measures to ensure that existing authorisations that have not been granted in accordance with the rules set out in the Directive are reviewed within a reasonable period of time. The Directive also contains the following policies:

- Remove any prevailing restrictions that hamper access for port service operators.
- Where it is in the interests of efficient and safe port management, Member States may require service providers to obtain authorisation. Such authorisations must be objective, transparent, non-discriminatory, relevant and proportional. They must also be made public.

- Member States may only limit the number of providers of port services for reasons of constraints relating to available space or capacity and to maritime traffic-related safety or in accordance with environmental regulations. Within this limitation, the competent authority must allow the highest number of service providers.

- The criteria for any limitation must be objective, transparent, non-discriminatory, relevant and proportional.

- Where the managing body of the port wishes to provide port services in competition with other service providers, it must be treated like any other competitor. In such circumstances, any decision limiting the number of service providers and the selection itself must be entrusted to a neutral body.

The proposed directive is a major step forward in developing a highly competitive market for tugs across the EU ports and does not appear to detract from the risk management approach that has been adopted by the UK.

5.6 OTHER REGULATION

5.6.1 Manning and Community Services

Tilbury - In the UK, manning levels on harbour tugs are not regulated unless the vessels regularly go to sea. Under such circumstances they must carry a "Safe Manning Certificate " issued by the Maritime and Coastguard Agency that is based on the type and size of tug and the work that is required to carry out.

The UK Government does not impose regulations requiring towage operators to provide ancillary services such as pollution response or to collect any taxation surcharge such as VAT.

Rotterdam and **Hamburg** - The Dutch and German Governments adopt a similar position as the UK in respect of ancillary services and taxation surcharges. In Hamburg there are no salvage, firefighting or pollution response requirements imposed on harbour tug operators.

In Rotterdam, manning is regulated by the "ZeevaartBemanningswet" (art. 4 & 12) of the Shipping Inspectorate ("SI"). The procedure requires the owner/operator to submit to the SI the crew level desired and demonstrate that the proposed crew level is appropriate for the work and that the tug can sail safely. This accords with the approach set out in IMO Resolution A.890(21). The process substantially depends on the tug specification, crew training levels, automatic engine room, sailing areas, procedures, etc. In most instances, tugs in Rotterdam have a three man crew.

In Hamburg, there is apparently no regulation. Instead, tug manning levels are set by the union for seafarers. (*Seeberufsgenossenschaft*).

5.6.2 Subsidies

Tilbury - The UK Government does not provide any diesel fuel subsidies. However, they have recently introduced a new tax regime for shipping companies. The provisions

are fully described in the *Finance Bill* 2000, which can be reviewed at HM Treasury web site[1]. Clause 81 and Schedule 22 provide for an optional new taxation regime for shipping companies known as "tonnage tax". Under a 10 year election into this regime a shipping company, that is in full compliance, may calculate its taxable profits based on the tonnage of the ships it operates, rather than by reference to its actual business results. This favourable taxation regime is being introduced to support the UK shipping industry and to promote the training of UK resident seafarers in the process. The regulations setting out the minimum training obligations for a tonnage tax company or group are set out in the *Tonnage Tax (Training Requirements) Regulations* 2000.

In Europe, the position is mixed. Reports from **Rotterdam** indicate that there are no subsidies for diesel fuel used in tug operations and no fiscal support measures for the industry either. In **Hamburg** the same applies as far as fuel is concerned but there is a newbuilding subsidy known as the KG (*Kommandit Gesellschaft*) system or more popularly "dentist & lawyer ships" (Zahnwalt), where private sector high net worth investors can use this KG scheme as a tax shield. We have been advised that this subsidy is available for tug owners.

5.6.3 Port Authority Tendering and Control

EU regulations are being formulated that will determine the procedure to be adopted by port authorities in the event that they wish to limit the number of tug operators in a port through a licensing arrangement (refer Section 5.5.2 above).[2]

Tilbury - In the UK, port authorities do not generally have the power to review or control the operations of harbour towage operators. However, a new code of practice, the Ports Marine Safety Code ("the Code") has just been introduced. The Shipping Minister, Keith Hill said that the Code introduces a national standard for every aspect of port marine safety. It establishes a measure by which harbour authorities can be accountable for the legal powers and duties which they have to run their harbours safely. He said harbour authorities must apply these principles if they are to discharge their legal duties and statutory powers to the national standard that the Code establishes.[3]

The Code requires tugs to be included in the risk assessment process and towage guidelines for ports will be developed in consultation with pilots, tug operators and crew and port users. Ultimately, the industry considers that the Code will influence tug specifications, manning levels, work practises and towage service standards. However, it does not purport to impact towage pricing or customer satisfaction levels.

Hamburg, Rotterdam and **Zeebrugge** - Zeebrugge appears to be in a very different position to Hamburg and Rotterdam, where the port authorities do not impose any licensing arrangement and they do not purport to control tug specifications, pricing, work practices, service standards or customer satisfaction.

6 NORTH AMERICAN HARBOUR TOWAGE

Three ports were surveyed in North America: Los Angeles, Philadelphia and Seattle. From a towage point of view all three are twin ports, with the operators in each providing services with the same fleet to both ports, i.e. Ports of Los Angeles and Long Beach, Ports of Philadelphia and Camden (New Jersey) and Ports of Seattle and Tacoma. All data in this survey is therefore provided as far as possible for the twin ports in each case (in some cases estimated). Both LA/Long Beach are major gateway ports for landbridge cargo from Asia and Philadelphia is the number one port on the US East Coast for meat imports.

6.1 TOWAGE PROFILE

6.1.1 Operators

A total of 5 operators were surveyed in the 3 ports as follows:

- LA/Long Beach (3) – Crowley Maritime, Foss Maritime and Millennium
- Philadelphia/Camden (2) – Moran Towing and McAllister Towing
- Seattle/Tacoma (2) – Crowley Maritime and Foss Maritime.

On the US East Coast ("USEC"), Moran and McAllister have a harbour towage service capability stretching from New York to Florida, while on the US West Coast ("USWC"), Crowley and Foss have a similar capability from California to the Pacific North West and, in the case of Crowley and Millennium into Alaska as well.

6.1.2 Fleet

The harbour towage fleets in all three ports are of very comparable size ranging from 14 (Seattle/Tacoma) to 16 vessels (LA/Long Beach).

- On the USWC they all have first call salvage, plus firefighting capability in LA and on selected tugs in the Pacific North West.
- On the USEC firefighting is the responsibility of the municipal authorities.
- Throughout the US, pollution response is the responsibility of the US Coastguard.

6.1.3 Other Services

The USWC operators offer a portfolio of marine services beyond harbour towage, in particular deep sea towing, offshore services and salvage. In Crowley's case, these include terminal operations and environmental services; in the case of Foss, ship repair operations are also a significant part of their business, while Millennium is heavily

involved in bunkering services and storage of petroleum products. On the USEC Moran Towing also has extensive environmental service capability.

6.2 MARKET PROFILE

6.2.1 Vessel Calls

Vessel calls last year were estimated in the twin ports to range from a high of 6,000 in LA/Long Beach to 2,000 in Seattle/Tacoma, with Philadelphia/Camden generating about 2,800.

6.2.2 Towage Demand

Precise data for tug jobs in the three sets of ports is not available, but they have been estimated as 18,000 in LA/Long Beach, just under 7,750 in Seattle/Tacoma and just over 6,000 in Philadelphia/Camden.

6.3 SERVICE PROVISION

6.3.1 Structure

Harbour towage services are available round the clock 365 days a year in all the ports surveyed.

Data on vessel arrivals are basically the responsibility of the ship's agent in all cases and there is no system of vessel priorities in any of the ports.

Tug booking lead time varies from nil in Philadelphia to 2 hours in Los Angeles and 24 hours in Seattle (for incoming vessels). Changes and cancellations without charge are subject to 1 hour's notification in LA and 2 hours' in Seattle. Cancellation in Philadelphia less than four hours from time booked is subject to a penalty.

6.3.2 Controls

The harbour towage industry in the USA is subject to a minimum of control and a maximum of market pressure. There are no port service guidelines stipulating tug usage – this is a decision for the vessel's master and the pilot.

Equally the only consultation about service and prices between the providers and customers is on a bilateral basis. Anti Trust legislation actively discourages joint consideration of such matters either within the industry or with a range customers.

6.4 PRODUCTIVITY

6.4.1 Tug Jobs per Call

This ratio varied from nearly 3.9 in Seattle to 3.0 in LA and just under 2.2 in Philadelphia.

6.4.2 Tug Jobs per Tug Day

Fleet utilisation was significantly higher in LA/Long Beach at 3.12 jobs per available tug day when compared to just over 1.5 in Seattle and 1.1 in Philadelphia.

6.4.3 Labour

Manning per tug varied according to tug type and local union agreements. On the USEC it is 7 crew, on the USWC from a minimum of 2 and 4 in LA and Seattle respectively to a maximum of 6.

Typically there are 3 sets of crew per vessel on the USEC and 2 on the USWC.

6.5 COMPETITION

6.5.1 Government regulation of entry to the industry, pricing and competition

The Jones Act (*Merchant Marine Act* 1920) requires vessels engaged in trade between US ports to be US Flag, US built, owned by US citizens and crewed by US citizens. Harbour towage operations are subject to the provisions of the Act. The impact of this regulation adds significantly to the cost of new tonnage due to the high cost of building a tug in the US.

All tug operations within the United States are subject to marine safety regulations of the Federal Government which are enforced by the United States Coast Guard, operating under the jurisdiction of the U.S. Department of Transportation. Safety regulations include IMO conventions. Certain State regulations also impact tug operations eg. California Code of Regulations Title 14 Division 1, Chapter 4, Section 851.20 sets out requirements for tanker escort vessels, including bollard pull testing requirements and equipment requirements.

There are no requirements in the sample ports for tug operators to be licensed. The ports where franchising has been implemented, namely, Canaveral Port Authority, Port Everglades and Port Manatee have drawn criticism from the Federal Maritime Commission ("FMC ") as being arrangements that are generally contrary to US pro-competitive policies.[4]

There is no Government regulation of towage tariffs. Also, there is no Government requirement to impose any taxation surcharge on towage services.

The desire to maintain competition in the tug industry has also led the Federal Maritime Commission (FMC) to issue an Order to Show Cause to various marine terminal operators ("MTO's") serving the lower Mississippi River. They have been ordered to explain why their entry into exclusive tug arrangements has not breached s 10(d)(1) *Shipping Act* 1984.[5] The FMC asserts that by requiring tug services to be provided pursuant to an exclusive arrangement controlled by the MTO, the MTOs are eliminating choice in favour of the designated tug company and in so doing are causing ship operators to incur substantially higher charges than existed previously.[6]

6.5.2 Contestability

There are no regulatory barriers to entering the towage business in the US, as evidenced by the recent entry into the LA/Long Beach harbour operations of Millennium. There appears to be an isolated incidence of union based restrictions in Puget Sound. However, an onerous barrier exists in the cost of building tugs that comply with the Jones Act.

When coupled with declining numbers of ship visits, caused by an increase in ship sizes across container and bulk trades and the rationalisation of liner services to US west coast ports, the restrictions should be seen as largely economic. This was undoubtedly the prime motive behind the recent rationalisation of harbour towage services in two of the three ports examined – in Philadelphia/Camden Moran Towing acquired Turecano Towing in 1999, and in LA Foss acquired Wilmington Tug Company the previous year.

6.6 OTHER REGULATION

6.6.1 Manning and Community Services

The US Coast Guard has a minimum requirement for manning on "inspected vessels" over 200 Gross Tons (US regulatory tonnage). Reports from Seattle indicate that few harbour service vessels are of a size to be inspected. The Coast Guard also regulates maximum hours of work per watch. Certain US West Coast States require additional manning for tanker escorts.

There appear to be no regulations that require the provision of marine pollution or firefighting services, although some of the vessels of one of the operators in LA have the latter ability. Similarly there is no requirement for operators to include taxation surcharges on their invoices.

6.6.2 Subsidies

There appear to be no subsidies for diesel fuel used by tug operators. Reports from Seattle indicate that the only direct subsidy that seems to be available to tug operators relates to a subsidy by the State of California to re-engine work boats such as tugs and fishing vessels to meet stringent emission standards. This has been known as the Carl Moyer Program. The program has been focused on NOx emissions but funding ceased in March 2002 and it is not yet known if there will be further State funding.

The second subsidy is indirect and is a government guaranteed loan program, entitled Title XI. We are advised that under this program, funds are raised by the operator through normal commercial institutions, but the government guarantees the loan. The advantages to the participants are a lower interest rate (estimated 1% reduction) and a loan term of up to 25 years versus a term of 7 to 10 years without Title XI

Tugs are said to be eligible for Title XI therefore it is expected that some of the tugs operating in Puget Sound would be financed through the Title XI loan guarantee program. We are advised that the program was established under the *Merchant Shipping Act* 1936 and administered under the *Credit Reform Act* 1990.

6.6.3 Port Authority Tendering and Control

As we have seen above, the FMC has been very critical of ports and MTO's that have sought to restrict competition in the provision of tug services. However, the FMC research found the only State with any history of anti-competitive practices from port authorities was Florida and therefore it has never been widespread.

We are advised that there are still some anti-competitive structures. Reports from Seattle indicate that supply of towage services in Puget Sound is restricted by an alliance between the Puget Sound Pilots (Masters, Mates & Pilots Association), Ships Agents and tug operators Crowley and Foss. (The crew are members of the Inland Boatman's Union of the Pacific – the maritime division of the International Longshore and Warehouse Union). There is no suggestion that the port is involved. There were no reports of similar arrangements received from Philadelphia or Los Angeles.

As a general proposition, tug specifications, pricing, manning, work practices, service standards and towage customer satisfaction are not subject to control by port authorities.

7 CONCLUSIONS

7.1 INDUSTRY STRUCTURE

Adsteam Marine's overall business profile as market leader in the Australian Harbour Towage industry has significant differences from those of the market leaders in most of the other ports examined in three respects. It has neither harbour towage critical business mass (vessel calls) in a single major location, nor a range of related other major marine service business, nor is it linked to a major terminal operator. This is illustrated in Table 4 below:

Table 4: International Harbour Towage Industry Profile

Location/Port	Critical Mass (ship calls)	Marine Business Spread	Terminal operations
Auckland	No	Marginal	Yes
Hong Kong	Yes	Some	Yes
Port Klang	No	No	Yes
Singapore	Yes	Some	Yes
Hamburg	No	Yes	No
Rotterdam	Yes	Yes	No
Zeebrugge	No	Yes	No
USEC	No	Yes	No
USWC	No	Yes	No
Adsteam	No	Marginal	No

This tabular assessment is commented on in more detail below.

- **Narrowness of business activity:** despite its recent diversification into port management and operations and deep sea tug and barge operations in New Zealand and the Pacific North West of the U.S., Adsteam in Australia and Europe is still predominantly a harbour towage operator. The only other example approaching this narrowness of business base in the international ports surveyed was in Philadelphia, where both operators are heavily involved in harbour towage on the US East Coast. Both, particularly Moran, have nevertheless developed significant coastal and river transportation capabilities in the tug and barge sector

- **Broadness of towage business reach:** in both Australia and UK, Adsteam serves a very wide range of ports (the 7 declared ports in Australia account for less than

half its local tug boat fleet). A similar range of port coverage is to be found on both the USEC and USWC by the relevant towage fleet operators (Moran and McAllister USEC and Crowley and Foss USWC). In Europe Smit International is the closest to being a global towage operator, while the German groups of Kotug and Fairplay have a significant north European business base in the North Sea/Baltic. None of the Asian operators come close in comparison although PSA Marine is known to have geographic expansion as a key business objective.

- **Diversity of overall business base:** Smit International has already been mentioned in this context. The scale of its fleet, plus geographic and sector range of its marine services, leaves it in a league on its own (over 650 vessels around the globe with activities ranging from harbour towage through pipeline installation, heavy lift vessels, offshore services, salvage, ocean towage, fleet management etc). Crowley Marine in the US is a lesser example of the same type.

- **Linkage to terminal operations:** in the case of Singapore, Klang, Auckland and HK the major towage operators in each case are part of groups whose core business is terminal operations.

7.2 CAPACITY

- **Fleet deployment:** Adsteam has towage fleet numbers (48 in UK and double that number in the whole of Australia) that place it well up the global harbour towage industry scale, like Smit in Europe and the USEC and USWC operators. These fleets are spread across a wide range of ports. This is in marked contrast with the highly concentrated fleets of PSA Marine and HK Salvage in Asia.

- **Other port related services:** Adsteam vessels provide a broad base of salvage, firefighting and pollution response capabilities as do PSA Marine in Singapore. This is not the case in Hamburg, the USEC or HK. Firefighting capability however exists in most of the towage fleets reviewed, while pollution response is only required from harbour towage operators in Rotterdam.

- **Salvage:** such services are not required of the harbour towage operators on the USEC, in Hamburg or Klang. Elsewhere most of the operators provide it either via their harbour towage operations or as a specialist business.

7.3 MARKET SIZE

The Adsteam declared port harbour towage operations in Australia are compared with those of similar size overseas markets in Table 5 below (latest available 12 month period in estimated '000s other than tugs and ratios):

Table 5: International Port Towage Comparisons

Location	Harbour Tugs	Ship Calls '000's	Tug Jobs '000's	Tug Days+ (360/tug) '000's	Jobs per Call	Jobs per Tug Day
Australia Declared Ports	27	8.5	28.7	10.4	3.37	2.76
Singapore	52	62.0*	110.0	18.7	1.77	5.88
HK	30	36.7*	65.0	10.8	1.77	6.02
Klang	13	13.1	37.5	4.7	2.87	8.02
Rotterdam	30	19.0*	23.0	10.8	1.21	1.76
Hamburg	16	11.7	15.0	5.8	1.28	2.60

*Source; overseas interviews; * exclude ferries, river craft, tug and barge. +Tug Days equals Tug Jobs divided by Jobs per Tug Day*

The benefits of scale and geographic concentration are self evident in terms of jobs per tug day in the three Asian ports in the above table.

7.4 CRITICAL MARKET TRENDS

Table 6 below demonstrates how containership operators are increasingly seeking economies of scale by building larger vessels. In the capital city ports of Australia, this type of vessel now comprises over 40% of the towage business.

The paradox for towage operators is that ships with increased container capacity, increased deadweight and windage, generally require tugs with higher bollard pull. However, the technical advances in ship construction has provided modern container ships with much improved manoeuvrability through use of powerful bow thrusters, efficient rudders and hull forms, thereby reducing the number of tugs needed to assist in berthing and unberthing in normal weather conditions. Unfortunately when weather conditions are unfavourable, these technological advances are not effective, thus resulting in the intermittent but far from constant need for sophisticated tugs of high power, bollard pull and manoeuvrability to avoid unacceptable delays to the schedules of these very expensive sophisticated box ships.

Table 6: Containerships of >2,500 teus by Date of Construction (in service & on order as of 1/1/02)

Time Frame	2,500-3,299 teu panamax	3,300-4,299 teu panamax	4,300+ teu panamax	4,300+ teu post-panamax	Period Total	Cumulative Total
1972-1976	5	0	0	0	5	5
1977-1981	32	2	0	0	34	39
1982-1986	64	21	0	0	85	124
1987-1991	71	40	4	5	120	244
1992-1996	50	102	12	45	209	453
1997	14	27	8	21	70	523
1998	10	32	8	17	67	590
1999	2	5	3	14	24	614
2000	7	5	15	33	60	674
2001	13	15	3	64	95	769
Total in Operation	258	249	53	199	769	
On Order by date due for delivery						
2002	22	20	25	46	113	
2003 (orders to date)	18	19	13	32	82	
2004 (orders to date)	3	6	7	16	32	
2005 (orders to date)	0	0	2	0	2	
Total on order	43	45	47	94	229	

Source: Lloyd's Shipping Economist March 2002

The position is further complicated by the fact that tugs have a working life of more than 30 years. With ship sizes increasing in the manner shown in the spreadsheet, a reasonable allowance has to be made for increasing the bollard pull of new tugs to a level that will leave the tugs competent for their anticipated task in the medium term.

7.5 SERVICE PROVISION

- **Availability:** Harbour towage is provided on a 24 hour 365 day basis in all the operations surveyed other than Adelaide

- **Fleet sharing or collaboration:** Occurs in most ports (usually on an informal ad hoc basis) other than for Auckland, Klang, Tilbury, Zeebrugge and Philadelphia. In the case of the first two, additional vessels are chartered in when required; in the latter three the local fleet is supplemented with vessels from neighbouring port operations as with Adsteam in Australia.

- **Bookings:** These are made in almost all cases via the shipping agent, either via a central port booking/traffic management/information system

- **Lead time for tug bookings:** Notification of changes and cancellation without penalty are comparable to those provided by Adsteam in Australia other than in

the USA and Tilbury where the operations require longer notice and are less flexible about changes.

- **Quality Assurance:** Most operators now offer some form of QA certification, usually ISO 9002

- **Port Service Guidelines:** Only Singapore and Klang have guidelines comparable to those in force in Australian ports.

- **Consultation:** Consultation with stakeholders and customers as a group is not the normal practice outside Australia other than in Tilbury, Hamburg and Singapore.

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7.6 PRODUCTIVITY

Productivity measures across ports and international boundaries are very difficult to apply with meaning and relevance. The two most common are tabulated in 7.3 above. We would urge extreme caution in applying such ratios other than on a historic trend basis within an individual port for the following reasons:

- **Towage jobs per call** will be vitally influenced by any Port Service Guidelines that exist, the rigidity of their enforcement, the marine configuration of the port and terminal in question, as well as weather factors (e.g. wind in Fremantle and Auckland v. Sydney). In addition, the impact of vessel type on tug demand can be significant (eg windage on car carriers making them particular susceptible to greater tug usage, whereas bow and stern thrusters and special propulsion systems on cruise ships will reduce tug usage).)

- **Towage Jobs per Tug Day** again are susceptible to critical volume of demand, configuration of ports and terminals, distance from tug base to job.

- **Jobs per Crew member employed** will in part be determined by any regulatory guidelines on manning numbers for different tug types, agreements on crew rostering and shift length, leave benefits, use of casuals, as well as industrial practices and labour agreements.

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7.7 COMPETITION

- **Competition** is intense in all the international ports examined, particularly Rotterdam, Hamburg, Hong Kong and increasingly Singapore, while competition in Los Angeles and Philadelphia have also put operators under severe revenue, profit and ROI pressure

- **Lack of price increases** for anything between 5 and 30 years have been cited in Singapore, Klang, Rotterdam and HK as evidence of the financial stress to which the industry is subject.

- **Ease of entry** is palpable in HK, LA, Rotterdam and Hamburg, but much less evident in Singapore (licensing), Seattle (industry interest groups) and Zeebrugge.

- **Rationalisation** is again clearly evident via acquisitions in Singapore, HK, Hamburg, Zeebrugge, Philadelphia and Los Angeles as well as in the declared ports in Australia.

- The smaller **single service provider** ports such as Auckland, Tilbury and Zeebrugge are obviously under less direct pressure, but lapses in service or unreasonable pricing would rapidly attract competition from outside the port.

7.8 REGULATION

The degree of regulation of the harbour towage industry can be summarised in the following manner:

- **High:** Singapore (licensing, performance reporting etc) and Klang

- **Moderate:** US ports, which are generally not highly regulated other than in respect of flag and crew regulations.

- **Low:** Auckland, HK, UK, and North Continent

As far as regulatory reform is concerned, the EU leads the way in seeking to finalise a Directive that will promote competition and transparency, within a framework that allows for the evolving risk management approach to tug operations now favoured in the UK.

This emerging unified policy on the port services industry is in marked contrast to the situation in Australia, where jurisdiction is the domain of the various States, and in some cases devolves to individual port corporations or authorities, other than with price monitoring by the ACCC in the declared ports. The result is a hotch potch of policies and regulation that at times is the despair of potential external industry entrants.

[1] http://www.hm-treasury.gov.uk/consultations_and_legislation/financebill2000/consult_finance_clause81a_2000.cfm

[2] The Commission of the European Communities have recently released an amended proposal for a Directive on Market Access to Port Services. Brussels 19.2.2002. COM(2002) 101 final.

[3] http://www.shipping.detr.gov.uk/pmsc/report/index.htm

[4] See Federal Maritime Commission Investigation into Exclusive Tug Arrangements in Port Canvaeral Florida, Docket 02-03 served February 25, 2002 citing *A.P. St. Philip, Inc v. Atlantic Land & Improvement Co. et al.*, 13 FMC 166, 11 S.R.R. 309 (1969) where an exclusive tug contract was found unlawful.

[5] S10(d)1 provides that No..m arine terminal operator may fail to establish, observe, and enforce just and reasonable regulations and practices relating to or connected with receiving, handling, storing, or delivering property.

[6] Federal Maritime Commission Docket No 01-06, served June 11, 2001.